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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 09/482,332 | 01/14/2000 | Michael A. Lamson | TI-28063 | 6840 |

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EXAMINER

FERRIS III, FRED O

| ART UNIT | PAPER NUMBER |
|----------|--------------|
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2128

DATE MAILED: 01/26/2004

5

Please find below and/or attached an Office communication concerning this application or proceeding.

P24

| | | | |
|------------------------------|------------------------|---------------------|--|
| Office Action Summary | Application No. | Applicant(s) | |
| | 09/482,332 | LAMSON ET AL. | |
| | Examiner | Art Unit | |
| | Fred Ferris | 2123 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 25 November 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-31 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-31 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 14 January 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. *Claims 1-31 have been presented for examination based on applicant's request for reconsideration filed on 25 November 2003 (paper # 4). Claims 1-31 remain rejected by the examiner.*

Response to Arguments

2. *Applicant's arguments filed 25 November 2003 (paper # 4) have been fully considered but they are not persuasive.*

*Regarding applicant's response to 112(1) rejections: Applicants have argued that the specification provides enablement for the limitations of the claims relating to the **analysis generator** on pages 12-13 of the specification. The examiner has again reviewed these passages. The passages merely state that "the analysis generator in Fig. 2 is the actual analysis engine of the modeling system" and indicates that the "electrical calculation programs used by the model data analysis" (of the analysis generator) "have been developed by the University of Arizona at Tucson" and include "two-dimensional and three-dimensional electrical analysis programs for capacitance as well as inductance". The examiner asserts that, first of all, it is inconceivable that a skilled artisan would necessarily have knowledge of certain electrical calculation programs developed at the University of Arizona. Second, in order to provide enablement for the limitations of the independent claims relating to the analysis generator, the specification must provide enablement such that one skilled in the art could make and/or use the invention without undue experimentation. Obviously, without*

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specific knowledge of the University of Arizona programs, which are not disclosed in the specification, as skilled artisan would not be able to realize the electrical calculation programs without undue experimentation. Third, as cited in the previous office action, merely stating that these programs “include two-dimensional and three-dimensional electrical analysis programs for capacitance as well as inductance” (page 13, line 15) clearly does not provided enablement such that one skilled in the art would not know how to make and/or use the invention, again, without undue experimentation.

Applicants have further argued that suitable electrical analysis programs are known and available to those skilled in the art. However, applicants have provided no specific examples of such programs nor does the specification indicate how such programs would operate in conjunction with the claimed invention. Specifically, if the claimed invention were to use a commercially available program as an embedded system, the specifics of how one skilled in the art would interface the claimed invention with the various subroutines, system calls, etc. (i.e. how the claimed invention would acquire the required operational features of such programs) would need to be disclosed. The specification is completely silent on how this would be accomplished. Accordingly, the examiner maintains the 112(1) rejections.

Regarding applicant's response to 103(a) rejections: Applicant's argue that the prior art does not disclose the arrangement of elements as claimed in independent claims 1, 12 and 22. Claim 1, for example, is drawn to:

A system, computer system, and computer-implemented method for modeling an electronic structure comprising:

Input generator: data describing model characteristics of segments, subdivisions and compositions,

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coupled to:

Segmentation generator: select, organize, store, convert segments of modeled structure into segment file,

coupled to:

Analysis generator: analyze segment file in calculation programs create output file,

coupled to:

Integrator: integrates output file into single model file and store,

coupled to:

Output generator: create summary file files in specific format

The examiner asserts that the arrangement of the elements as claimed is merely in accordance with what would be obvious, and necessary, for the system to operate. Specifically, it is obvious, and necessary to have the input generator first and coupled to the segmentation generator since the input has to first come from somewhere. The analysis generator analyses segment files that are output from the segmentation generator and, hence, obviously must necessarily be coupled to it. The integrator integrates the analysis files and hence must necessarily be coupled to the analysis generator and accordingly to the output generator. Further, as cited in the previous office action, the various “generators” of the claimed invention are disclosed to be software modules capable of performing a particular function (i.e. segmentation, analysis, input/output etc.) and appear to simply make use of features (i.e. file conversion, formats, etc.) which are inherent in the referenced commercially available software packages such as Pro/Engineer, SPICE, AutoCAD, etc. and, hence, would have been an obvious choice for use in designing a system for modeling an electronic structure. Accordingly, the examiner maintains the 103(a) rejections of claims 1-31 as cited below and in the previous office action.

As cited below, and in the previous office action, the examiner has determined that the specification for the claimed invention is delinquent in the areas cited under 112(1) rejections and has therefore made prior art rejections based on the limited scope of information contained in the specification. Accordingly, this action is made final.

Priority

3. *Applicant's claim for domestic priority under 35 U.S.C. 119(e) is acknowledged. However, the provisional application upon which priority is claimed fails to provide adequate support under 35 U.S.C. 112 for claims 1-31 of this application. (Please see 112(1) rejection below.)*

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

4. ***Claims 1-31 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.***

*Specifically, the **analysis generator** portion of the claimed invention has not been sufficiently disclosed in the specification. While the specification states that the*

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model data analysis executes a “plurality of electrical calculation programs” (page 13, line 4), and that the “programs have been developed by the University of Arizona at Tucson” (page 13, line 13) no algorithm or techniques are provided that teach how one would implement the “plurality of electrical calculation programs” to “create the electrical analysis output file” as referenced in the independent claims. Further, merely stating that the programs “include two-dimensional and three-dimensional electrical analysis programs for capacitance as well as inductance” (page 13, line 15) does not provided enablement such that one skilled in the art would not know how to make and/or use the invention without undue experimentation.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

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5. **Claims 1-31 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent 5,455,775 issued to Huber et al in view of "Time-Domain Characterization of Packaging Effects via Segmentation Technique", M. Righi, IEEE Transactions on Microwave Theory and Techniques, vol. 45, No. 10, October 1997.**

While the specification for the claimed invention is delinquent in the areas cited above under 112(1) rejections, the examiner has made prior art rejections based on the limited scope of information contained in the specification.

Independent claims 1, 12 and 22 are drawn to:

System, Computer implemented method and system for **modeling electronic structure** including:

Input data generator- characteristics of structure in segments, subdivisions, and compositions

Segmentation generator- select, organize, store, and convert segment files

Analysis generator- analyze converted segment file, create analysis output files from calculation sequence

Integrator- integrates analysis output files in sequence into model file store in report storage

Output generator- creates summary files in specific format

Regarding independent claims 1, 12, and 22: Huber discloses a computer system for designing physical packages for electronic components (structures) that includes an **input system** (Input Data Generator) for inputting physical design characteristics (Fig. 2, CL4-L38, CL5-L4), an **analysis program** (analysis generator) for analyzing and assigning various characteristics of the design (CL2-L55, CL6-L4), and a **partitioning program** (segmentation generator) for partitioning portions an integrated circuit, physical areas of a chip, chip carriers, boards, or card. (CL2-L44, CL11-L18,

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CL12-L27, Figs. 3 and 9) (Also see, Abstract, Summary of Invention, CL5-L4-14, Figs. 1, 6-8) The various "generators" of the claimed invention are disclosed to be software modules capable of performing a particular function (i.e. segmentation, analysis, input/output etc.) and appear to make use of features (i.e. file conversion, formats, etc.) which are inherent in the referenced commercially available software packages such as Pro/Engineer, SPICE, AutoCAD, etc. and, hence, would have been an obvious choice for use in designing a system for modeling an electronic structure.

Huber discloses partitioning of circuit elements, but does not explicitly teach segmentation of conductors in an electronic structure.

Righi discloses geometric segmentation of package conductors where the structure is divided into multiple segments (subdivisions) in order to analyze the circuit behavior. (Abstract, Section II – TLM Analysis, Section III – Segmentation, Figs. 7, 10, 11) Organizing and converting segment files would be obvious and necessary since the claimed invention uses standard formats, i.e. SPICE, DXF, IGES, etc.

It would have been obvious to one having ordinary skill in the art at the time the claimed invention was made to modify the teaching of Huber relating to a computer system for designing physical packages for electronic components (structures), with the teachings of Righi relating to the geometric segmentation of package conductors where the structure is divided into multiple segments (subdivisions) to realize the claimed invention. An obvious motivation exists since, as referenced in the prior art, segmentation of circuit elements improves the prediction of the performance of a packaged circuit at a fraction of the computational cost. (Righi, pp. 1901)

Regarding dependent claims 2-11, 13-21, and 23-31: As cited above Righi teaches **segmentation** arrangement and **modeling** of a semiconductor **device** in an **integrated circuit package** (leadframe) containing a **substrate** and **conductive pattern** and further considers **geometry, frequency, resistances, capacitances, and inductances** of the conductive pattern. (Figs. 7-10, Section II A-C, Section III)

Conclusion

6. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure, careful consideration should be given prior to applicant's response to this Office Action.

U.S. Patent 5,629,861 issued to Kim teaches electronic package design.

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U.S. Patent 6,022,649 issued to Neoh et al teaches structures of segments and sub-segments.

"New Electrical Modeling Approach for Simultaneous Switching Noise for High-Performance Packages", K. Kato, 1996 Electronic Components and Technology Conference, pp. 739-746, IEEE 1996 teaches segmentation in electronic packages.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Fred Ferris whose telephone number is 703-305-9670 and whose normal working hours are 8:30am to 5:00pm Monday to Friday.

Any inquiry of a general nature relating to the status of this application should be directed to the group receptionist whose telephone number is 703-305-3900.

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